

ABSTRACT

An automatic frequency control (AFC) system applies in a mobile station for automatically controlling a local frequency signal to be substantially synchronized with an input signal which is a first received signal S_H from a base station, and for being capable of shifting the frequency of the local frequency signal to be close to that of a second received signal S_{new} from another base station when the input signal is changed from the first received signal S_H to the second received signal S_{new} . The AFC system comprises a control module, a memory unit, and an automatic frequency controller. The memory unit stores a plurality of AFC parameter sets; each AFC parameter set corresponds to a base station within the wireless cellular system. When the input signal S_I is changed from the first received signal S_H to the second received signal S_{new} , the control module fetches the AFC parameter set, which corresponds to the second base station, from the memory unit; it then applies the fetched AFC parameter set, which corresponds to the second base station, to the automatic frequency controller to shift the frequency of the local frequency signal f_L to be close to that of the second received signal S_{new} from another base station.